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(54) FORMATION OF THIN FILM ON SUBSTRATE SURFACE**(57)Abstract:**

PURPOSE: To form a thin film excellent in adhesive strength even in the case where the differential thermal expansion between a substrate and a film material is large by sputtering a mixed material of a material for base material and a film material onto surface of the substrate and then sputtering the film material onto the above. **CONSTITUTION:** First sputtering is carried out by using a target prepared by mixing a material of the same kind as that of the substrate, such as a metal, with a material of the same kind as that of a thin film, such as ceramics, by which a thin film of the mixed material is formed on the surface of the substrate. Subsequently, sputtering is applied to the surface of the above by using a target composed of a material having the desired composition to form a thin film. Since differential thermal expansions between the substrate and the mixed-material film and also between the mixed-material film and the thin film are reduced by the formation of the above two-layer film, the strong thin film free from the occurrence of peeling and excellent in adhesive strength can be formed even in the case of the materials having large difference in the coefficient of thermal expansion.

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